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Claims

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1. A nucleic acid molecule which encodes a tissue repair protein and comprises a nucleotide sequence which hybridises to the nucleic acid of SEQ ID NO:1 under high stringency conditions.

2. A nucleic acid molecule according to Claim 1 wherein the stringent conditions are 1 x SSC, 0.1% SDS at 65 °C.

3. A nucleic acid molecule according to either preceding claim which is mammalian in origin.

4. A nucleic acid molecule according to Claim 3 which is derived from a human.

5. Use of the nucleic acid of SEQ ID NO:1, fragments or variants thereof, in determining expression of mRNA in selected target tissue(s) for diagnosing orofacial clefting.

6. Use of the nucleic acid of SEQ ID NO:1, fragments or derivatives thereof, in determining the presence of DNA mutations in patients suffering from, or suspected to be suffering from orofacial clefting.

7. A polypeptide or a protein comprising an epitope for an antibody or a protein modified by one or more amino acid modifications and comprising an epitope, or a fragment modified or unmodified comprising an epitope for a tissue repair protein encoded by SEQ ID NO:2.

8. A delivery vehicle comprising the nucleic acid molecule according to any of Claims 1-4 and/or polypeptide according to Claim 7, which optionally is in the form of a suspension.

9. A delivery vehicle according to Claim 8 which is adapted to deliver said nucleic acid molecule or polypeptide to a selected tissue.

10. Antibodies against the polypeptide according to Claim 7.

11. Antibodies according to Claim 10 which are monoclonal.

12. Use of antibodies, fragments or derivatives thereof according to Claim 7 in the diagnosis of orofacial clefting.

13. A method for detecting the antibodies according to Claim 7 in a sample, comprising contacting with the sample immobilised antibody against a protein or protein fragment of SEQ ID NO:2, which antibody has bound thereto a labelled ligand comprising a protein or protein fragment of SEQ ID NO:2, and detecting labelled ligand bound to immobilised antibody or labelled ligand bound to antibody in the sample.

14. A method for the treatment of orofacial clefting comprising administering to a patient suffering from orofacial clefting the nucleic acid molecule according to any of Claims 1-4 and/or polypeptide of Claim 7.

15. A method for the treatment of wounds and/or tissue repair comprising administering to a patient suffering from a wound and/or tissue damage the nucleic acid molecule according to any of Claims 1-4 and/or polypeptide of Claim 7.

16. A method of treatment according to either Claim 14 or Claim 15 wherein said nucleic acid molecule and/or polypeptide is administered by the incorporation of said nucleic acid molecule into a delivery vehicle according to either of Claims 8 or 9.

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17. A nucleic acid according to any of Claims 1-4 and/or a protein according to Claim 7 for use as a pharmaceutical.

18. Use of the nucleic acid according to any of Claims 1-4 and/or a protein according to Claim 7 for the manufacture of a medicament for the treatment of orofacial clefting and/or wound healing and/or tissue repair.

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19. A nucleic acid molecule which encodes a tissue repair protein and comprises a nucleotide sequence which hybridises to the nucleic acid of SEQ ID NO:3 under high stringency conditions.

20. A nucleic acid according to Claim 19 wherein the stringent conditions are 1 x SSC, 0.1% SDS at 65 °C.

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21. A nucleic acid according to either Claim 18 or Claim 19 that is murine in origin.

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22. A polypeptide or a protein comprising an epitope for an antibody or a protein modified by one or more amino acid modifications and comprising an epitope, or a fragment modified or unmodified comprising an epitope for a tissue repair protein encoded by SEQ ID NO:4.

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23. A delivery vehicle comprising the isolated nucleic acid molecule according to any of Claims 19-21 and/or polypeptide according to Claim 22.

24. Antibodies against the polypeptide of Claim 22.

25. Antibodies according to Claim 24 which are monoclonal.

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26. Use of antibodies according to either of Claims 24 or 25 in diagnosing and/or detecting orofacial clefting.

27. A method of producing a transgenic mammal comprising disrupting a gene, or the effective part thereof, the gene encoding at least one tissue repair protein.

28. A method of producing a transgenic mammal according to Claim 27 wherein the transgenic mammal is a rodent.

29. A method of producing a transgenic mammal according to either of Claims 27 or 28 wherein the transgenic mammal is a mouse.

30. A method of producing a transgenic mammal according to any of Claims 27-29 wherein the gene encoding the tissue repair protein is the nucleic acid molecule according to any of Claims 19-21.

31. A method of producing a transgenic mammal according to Claim 27 wherein the transgenic mammal is a human

32. A method of producing a transgenic mammal according to either of Claims 27 or 31 wherein the gene encoding the tissue repair protein is the nucleic acid molecule according to any of Claims 1-4.

33. A reporter gene construct based on the promoter region of a gene, or effective part thereof encoded by SEQ ID NO:1 or fragment or variant thereof.

34. Use of a reporter gene construct based on the promoter region of a gene or effective part thereof, encoded by SEQ ID NO:1 in the detection/screening of pharmaceuticals and/or other compounds and their potential teratogenic effects.

35. A cloned nucleic acid molecule encoding a tissue repair protein contained in a Yeast Artificial Chromosome species designated as AB 1380 YAC-CP1 and deposited with NCIMB Limited of Aberdeen, Scotland (UK) under accession number NCIMB 41005.

36 An isolated nucleic acid encoding a tissue repair protein, the nucleic acid may be selected from the group consisting of:

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- (a) DNA having the nucleotide sequence given herein as SEQ ID NO:1 (which encodes the protein having the amino acid sequence given herein as SEQ ID NO:2), and which encodes a tissue repair protein;
- (f) nucleic acids which hybridize to DNA of (a) above (e.g., under stringent conditions) and which encode a tissue repair protein ; and
- 10 (g) nucleic acids which differ from the DNA of (a) or (b) above due to the degeneracy of the genetic code, and which encode a tissue repair protein encoded by a DNA of (a) or (b) above.

37. An isolated nucleic acid encoding a tissue repair protein, the nucleic acid may be selected from the group consisting of:

- 15 (a) DNA having the nucleotide sequence given herein as SEQ ID NO:3 (which encodes the protein having the amino acid sequence given herein as SEQ ID NO:4), and which encodes a tissue repair protein;
- (h) nucleic acids which hybridize to DNA of (a) above (e.g., under stringent conditions) and which encode a tissue repair protein ; and
- 20 (i) nucleic acids which differ from the DNA of (a) or (b) above due to the degeneracy of the genetic code, and which encode a tissue repair protein encoded by a DNA of (a) or (b) above.

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